

XXXVI.—*The Mammals of Turkestan.*

By Dr. N. SEVERTZOFF.

[Continued from p. 336.]

77. *Cervus maral* (*C. canadensis*, var. ?).

The specimens from the Thian-Shan resemble those from the Altai in size, shape of horns, and colour; the latter are now in the Moscow Museum. The Thian-Shan specimens are somewhat darker, and perhaps larger in size.

The male winter specimens collected by me resemble the specimen in the Moscow Museum; and I also obtained one in the summer dress. This species is very close to *C. canadensis*, and is much more distinct from *C. elaphus*. The principal differences are in the size, length of tail, and colour, and to a certain degree also in the horns. Length from head to the tail 7' 8" to 8'; length of tail 2"; length of each horn 4', or even 4½'; height at the shoulders 4' 10" to 5'. The measurements of *C. canadensis* are about the same; the tail, however, is longer, say about 4".

Length of *C. elaphus* 6½' to 7', seldom up to 7¼'; height 3' 10" to 4'; tail 5" to 6"; horn up to 3', and very seldom longer.

The colour of this species on the head and neck, which are covered with rather longer hair than the rest of the body, is brownish grey; each hair has black and pale greyish-brown rings. The shoulders, the back, the sides, and the thighs are brownish grey, shaded with yellow, considerably lighter than the neck; round the tail, on the rump, and part of the thighs there is a broad, round, yellowish spot, separated from the other colour of the body by a dark-grey stripe, which is sharply marked towards the tail, whilst it gradually shades off into the grey colour of the back. The tail underneath is bare, and above is covered with light-yellow hair, marked with a greyish-brown line down the middle. The breast, the belly, and the legs are of a clear dark brown colour.

These specimens, two adult males and a young one, were obtained at the end of October in the Alatau, east of Vernoe, on the summits of Turgeni, near the eastern portion of the Issik-kul; the colour is similar on all the three specimens. The female specimen is dark brown, the spot at the tail is small, light brown, without a stripe: the hair is rough, not close and short; on the neck it is hardly longer at all than on the other parts of the body. This example was obtained at

the end of August in the fir-woods of Shamsi in the Alexandrovsk mountains.

C. canadensis is exactly similar to the present species in its winter dress, so much so that I mistook a specimen of *C. canadensis* in the Zoological Museum of the Academy of Sciences for the present species. This specimen was obtained by Mr. Vosnesensky at the N.W. coast of America. Not even in the coloration could any difference be discovered, except that the light-coloured spot of the Turkestan deer is a little wider at the tail than that of *C. canadensis*; but on the latter it is just as sharply marked and also surrounded by a stripe. The most important difference (except the length of tail) consists in *C. canadensis* not changing its colour during the summer. A live specimen seen by me in the Zoological Gardens at Berlin, in the month of June 1856, and another in the Moscow Gardens, in August, had both the winter dress of the Turkestan deer—the Moscow one being only a little more yellowish on the back, being, however, light with a dark belly.

C. elaphus is all over brown; different specimens, however, differ in the coloration, commencing from reddish brown and light brown, and merging even into blackish brown. The belly is lighter; the hair of the neck is longer, and is, as in the foregoing species, of a greyish-brown colour; the markings alter very little according to the different seasons of the year, except that the winter hair is rather longer and greyer than the summer dress, and at the hinder portion of the belly during the change of coat, before the rut, some blackish-brown hair appears. The light patch round the tail is not so sharply defined, and only the posterior portion of the thighs and the region round the tail are lighter than the back, being of a brownish-yellow colour.

The characters in the horns are constant, but not very conspicuous, as the very considerable differences between individuals of one species are more easily perceived than the specific characters which they have in common, the former depending upon the age and the branching of the antlers. Blasius was almost the first who fully explained these characters in the European species, and especially those of *C. elaphus* ('Säugeth. Deutschl.' p. 447). He drew attention to the deviation of the beam from its original direction at the point where each antler is given off, which also enabled him to follow the modifications of the beams and of the antlers. According to previous diagnoses, the horn of *C. elaphus* was characterized by the final division of the horn into the terminal tines, which could not be exact, for the simple reason

that at that portion the points are much closer to each other than they are on the basal part of the horns.

Consequently I will make use of Blasius's description of *C. elaphus* for comparison with *C. maral*, although I have compared the horns of the two species myself.

The beam of the horns of *C. elaphus* rises perpendicularly up to the brow-antler; then it inclines outwards as far as the next branch, continuing to do so until the third antler; this outward inclination gets less vertical at every antler, so that the angles formed by the chord of this arc and the axis of the skull become gradually less, and thus the horn forms one broken line bent to the outside.

The horns soon begin to incline backwards and their extremities a little inwards, this backward inclination becoming more considerable at the root of each successive antler, so that the angles formed by the chord of this arc to the cross axis of the skull become gradually wider, and the branches, when looked at from the front, are situated in pairs, or point irregularly to the outside, forming the crown of the horns. The whole crown forms a very acute angle with the beam. The brow-antler is directed forwards parallel to the cranial axis; the next three antlers are directed outwards with a slight inclination towards the front; but those of the final curve point upwards, inclining a little to either side, the ends of all the branches rising a little, as does also the beam after its final branch.

The horns usually do not increase after having developed sixteen to eighteen points, the two basal antlers included; but sometimes horns with even as many as twenty-two points are to be found, and on old specimens a branch does occasionally grow out of the brow-point of the horns. The branches on the final curve of the horns are closer to each other than on any other part of it, and form the crown; consequently on each complete horn there is one brow-antler, two side branches, and four to seven crown-points, all together from seven to ten points.

The shape of these horns is somewhat similar to that of the horns of *C. maral*, with the difference, however, that the crown of the latter does not differ so much from the other parts of the horn as it does in *C. elaphus*. The branches of the crown in the present species form a single row, being placed parallel to each other, and not branching off in different directions; sometimes they even run parallel with the lower antlers, in which latter case the anterior edge of each crown-point and that of the terminal portion of the beam are sharp, but the posterior angle very blunt, of course in different speci-

mens to a different degree, this not being at all regular or constant. As soon as the animal becomes adult the horns begin to grow more slowly; and they finish growing earlier than in the red deer, namely after the horns get from twelve to fourteen points, or, at the most, sixteen. Consequently each complete horn possesses one brow-antler, two side branches, and from two to four crown-points. The age of *C. maral* can be estimated from the horns only up to six or eight years, whilst that of *C. elaphus* can be ascertained as late as nine or even eleven years. Both these species become adult about the same age, namely five years, with ten branches to the horns.

The horns of *C. maral* are subject to numerous and considerable variations in different specimens, particularly in the crown—which fully corresponds with the slow growing of the latter. Also the bend of the terminal portion of the beam is variable in its length and directions, as well as the branches of the crown themselves; still they are constantly further apart from each other than those of *C. elaphus*. The differences in the lengths of the points seem to me to depend upon the animal's age; they are very considerable, as the length of the crown-points differs from 5'' upwards to 20''. If the horn has long crown-points, I have noticed that it is covered all over with numerous, sharp and very prominent ridges, which in themselves give proof that the animal is old. We may therefore say that after six or eight years new points do not develop, but the former ones are reproduced of larger size, but never to the extremes of the length or thickness of the points.

These extreme limits of the development of the points do not appear without a corresponding shortening of the beam: if the branches are very long, say 21 inches, the beam does not measure above $3\frac{1}{2}$ feet; but if the latter measures $4\frac{1}{2}$ or even $4\frac{3}{4}$ feet, the antlers do not exceed 15 to 18 inches; and the short beams, if compared with the long ones belonging to animals equally old, are always thicker.

The horns of a young *C. maral* can always be distinguished from those of a young *C. elaphus* by their immense proportions. I have also observed that before the crown is developed the terminal part of the beam is longer than the last antlers, constantly forming a considerable part of the whole horn, viz. about one third, whereas this branch in the horns of *C. elaphus* does not exceed one fourth. This is the case with specimens which possess from eight to ten tines; in individuals of six years these proportions are greater, but always present the above-stated characters.

The real meaning of all these differences is that the separate parts of the horns of *C. maral* are more developed than in *C. elaphus*, but that the number of these parts is smaller. At the commencement of the growth of the horns of *C. maral* there is more bony substance deposited than in *C. elaphus*, which up to the time when the animal becomes adult is equally distributed to all the parts of the horns, the deposit increasing with every year; so that by the time that there are five points on each horn a length of $4\frac{1}{2}$ feet has been attained, and consequently the increase of the branches in number ceases earlier (after the animal is adult) than in *C. elaphus*.

The horns of *C. canadensis*, as far as they are known to me from the examination of a few specimens and from descriptions, are very similar to those of *C. maral*, having only a still less regular crown, and still more widely separated points, and ten to twelve branches. The latter number of points is found in a specimen of *C. canadensis* in the Academy Museum of Moscow, whose horns so closely resemble those of *C. maral* that they can hardly be distinguished.

The specimens of *C. maral* collected by me were left at Tashkent; and I consequently could not compare their skulls with those of *C. elaphus* and *C. canadensis*.

The measurements and descriptions of the animals given here are taken from my notes, those of the horns with their variations from the enormous collection of horns from the Zailiskey Alatau, brought to St. Petersburg by orders from General Kaufmann, for the emperor's collection in his hunting-lodge. All these horns, however, are without the skulls, but, according to the preceding observations, are quite sufficient, it seems to me, to prove that *C. maral* is much nearer to *C. canadensis* than to *C. elaphus*; and I think it may be stated that *C. canadensis* and *C. maral* are one species, which inhabited Northern Asia and America at the time when the two continents were connected by the Aleutian group, which was formerly a long narrow piece of land. This species may therefore be included in the number of animals which prove that the two continents have once been connected, as do *Ovis nivicola*, *Ursus arctos*, *Tetrao canadensis*, and others, which all inhabit both continents.

The characters which distinguish *C. maral* from *C. canadensis* might have been developed after the separation of the two continents; the most striking is that *C. canadensis* does not change colour according to the different seasons, as is done by *C. maral*. I do not know, however, whether this is constant in all localities, or only to be seen on the western shore of America, where the summers are cold.

Even in captivity the difference in the colour can be noticed, which probably depends upon the climate, as the specimen of *C. canadensis* in the Berlin Zoological Gardens is greyer in summer than the specimen in the Moscow Gardens. I have also noticed the fact that *Equus hemionus*, which in summer is dun and in winter mouse-grey on the steppes, has remained mouse-grey all the year round in the menagerie of St. Petersburg. On the other hand, the difference between *C. maral* and *C. elaphus* is very ancient, and originated at a period of time when Europe and Asia were separated by the sea, which at the Pliocene period occupied the present deserts of Persia, Turcomania, the Kirgies steppe, and Barbary (in the western portion of Siberia), as far as the Arctic Ocean, thus connecting it with the Indian Ocean. These deserts and steppes prove, by their salt lakes and plains and the shells that are now and then dug out of the ground, that here there was once a sea; and at present they form the limit where *C. elaphus* and *C. maral* meet each other. This limit at different times has been different. There was a time when *C. elaphus* was distributed as far as the Ural mountains; this is proved by a horn which was dug out of the bed of the Ural river, a little below the town of Ural, and which is now in the Ural Army Museum. I give a drawing of it here.

Judging from the form of the crown of this horn, it certainly belongs to *C. elaphus*, and does not differ at all from the recent horns of that species. It is true that in the present specimen the antlers are more curved; but some specimens are also met with in which they are quite straight. The present specimen, however, is typical in the varied directions of the crown-points, which I have shown to be the best characteristic of the horns of *C. elaphus*, and which are very plainly marked in this Ural horn. This horn has seven points—one brow-antler, two lateral points, and four crown-points, which are placed in pairs and are all close to one another.



I am sorry to say that I cannot state from which strata this horn was derived, as it had been already washed by the river

from its original matrix before it was dug out of the river's bed.

One of the branches is broken off; but the horn has evidently not been carried far by the stream, as its natural inequalities of surface were quite evident and not at all water-worn; it also retains its pedestal, and consequently was not a cast horn. Still, after some comparisons, the time may yet be easily fixed when *C. elaphus* inhabited the Ural, this being further east than it occurs now, towards the limit of the distribution of *C. maral*. It could not have been during the Glacial period, as at that time the whole of European Russia formed the bottom of a sea; nor could it have been much earlier, as the horn dug out of the Ural so closely resembles the recent ones. Consequently there remains the conclusion that *C. elaphus* inhabited the Ural after the glacial period: probably it may have been at the period of the deposition of the "black earth," which extends from Galicia as far as the Syrt, including the region watered by the rivers Volga and Dnjepr. The eastern frontier of the occurrence of *C. elaphus* at the present time runs between the Baltic and the Black Sea, meeting there the elk. Towards the south *C. elaphus* is distributed over the Balcan peninsula, Asiatic Turkey, and the Caucasus. It is very probable that, at the time when the elk arrived in the forests between the Vistula and the Altai, it drove out *C. elaphus* from these localities and forced it to go further west; whilst *C. maral* has been driven away further to the south-east. At the time when *C. elaphus* was distributed as far as the river Ural, *C. maral* may have occurred further west than it does now, namely up to the basin of the Tobol and river Turgai and Sari-sa. It is even now met there, but only occasionally, in the forests of the Karkalinsk and Bayan-aulsk mountains. To the south from the Altai the maral, avoiding the steppes of Nor-saysan, inhabits the mountain-forests which extend over the Thian-Shan range. In Russian Siberia it has been met with on the Semiretchje and the Zailisky Alatau, in the mountains near Issik-kul and Narin, everywhere in fir-woods, and only occasionally in the greenwood districts. In summer it feeds even on the Alpine meadows, above the fir-district, and by night it always descends lower down to rest. In spring it sometimes feeds on the new leaves of bushes. It grazes usually about dusk—that is, early in the morning and late in the evening, resting and ruminating during the day. I obtained one at ten o'clock in the morning of the 20th September, when it was resting.

The horns are cast in spring; by the Thian-Shan deer about the end of April to May. During the months of June and

July the newly-grown horns are soft; and this is the time when these animals are mostly pursued by the Cossacks for the sake of their horns, which are readily bought by the Chinese people. In August the horns become hard; and in September the rut commences; the change of coat usually begins in the month of August. A young stag in my collection, shot on the 24th September at the sources of the river Merca, to the west from Vernoe, is 5' 10" long, and 3' 8" high at the shoulders. Like the old specimens, it was already in the full winter dress; but the horns were only just commencing to grow, forming two very small points on the skull. I reckoned that it was born in April, the more so as I saw in September a young hind of the same size, and also in winter dress, which had been caught alive in July when it was quite small. According to this the period of gestation would extend for about seven and a half months, namely from the beginning of September to the end of April or May.

A maral stag, if caught when young, is very easily tamed; the one seen by me in Vernoe followed its master like a dog, and was also very friendly with strangers. It used to eat out of one's hands, and sometimes even would walk into the rooms, where it smelled and looked at every thing; sometimes it ran about the town, and, in fact, knew the streets very well indeed, as it came home by itself and never lost its way. It fed on any plants it could get hold of, on hay, oats, barley, bread, boiled and raw potatoes, cabbage and all sorts of roots, and was very partial to the leaves of apple-trees.

M. W. P. Semenoff also kept a stag for about six years. It was always allowed to run about at liberty, sometimes keeping in the mountains for several days, but always coming back again. During the breeding-season it associated with the wild deer; but after this season was over it came back again to stables, which it very seldom left during the winter. It must have been ultimately killed by some sportsmen who mistook it for a wild deer.

The soft horns were every year cut off and sold to the Chinamen; and in several places stags are kept and bred for that purpose, especially in the Altai Zabaikalje.

I obtained a female specimen for my collection even further than Issik-kul, namely from the fir-woods of Semsha in the Thian-Shan mountains, on the 9th July, in a very much worn summer dress: this also proves the above-stated time of the animal's change of coat. There is very little doubt that it occurs in the fir-woods of the Alexandrovsk mountains, and still further west than Semsha, at least about the river Ala-archa.

According to the statements of the Kirgies it is to be met with on all the mountain-chains of the western Thian-Shan, on the tributaries of the Susa-mir, Talas, and Chirchik, as well as in the Karatau mountains; it mostly keeps to the fir-woods, as is stated above, and is exceedingly rare in localities which do not abound with these trees.

I myself did not observe it at Karatau, but met with some specimens of *C. capreolus-pygargus*, and even saw the track of a bear. Also in Copal I noticed some bears, but could not find any stag—although it occurs there, as considerable numbers of them are shot annually; and therefore I believe the Kirgies' statement to be quite correct, as there is nothing to disprove it.

Besides the Altai, this stag inhabits in Siberia the country about the upper part of the Jennissey, as far as Crasnojarsk, as well as the wooded hills of the Sajon and Zabaikalje; to the south it probably goes as far as the desert of Gobi.

Up to the present time this stag has been described as a Siberian variety of *C. elaphus*; it only remains now to explain how this mistake originated.

All the zoologists followed Pallas, and made the same mistake as he did, although among them, I must state, there were several who had even seen the deer themselves, as Radde, Schrenck, and Middendorff. It appears to me that Pallas was confused by the summer dress of the maral, which resembles that of *C. elaphus*; and not having a sufficient number of specimens, he may have thought that the differences in the horns were not constant. Besides, at that time it was not known that the two continents were separated by a sea during the glacial period, nor even that Asia and America were connected with each other; so that it seems quite natural that Pallas did not compare the present species with *C. canadensis*, but with *C. elaphus*, and took the present species for a variety of the latter. The later zoologists followed Pallas without even taking the trouble of an exact examination of the two species.

I was led to compare them by a mistake I originally made, which did not appear in print, but which I am willing to acknowledge.

When a student at Moscow I had made a drawing of the Altai stag's horn for M. Roulier. At that time I had very carefully noticed the characters; afterwards, however, I mistook a horn of the real *C. canadensis* for one of the present species: the horn belonged to a stag obtained in California, and is now in the St.-Petersburg Academy Museum. Later

on I was again struck with the resemblance of *C. maral* to *C. canadensis*, which I saw alive in the Zoological Gardens at Berlin; but from *C. elaphus* I always distinguished the present species correctly.

This led me to a comparative examination of the three forms, which showed me that I had hardly made a mistake in supposing *C. maral* to be *C. canadensis*. I could only distinguish the two by the labels attached to them in the gardens or museums; the differences are so trifling and indistinct; and at the time I even thought these differences were not constant.

It now seems to me that it would be unadvisable to retain the name of *C. canadensis*, var. *asiatica*; and I think it would be more correct to name it *C. maral* or *C. wapiti*, which latter name is better known to American zoologists, with three or even four local varieties, namely:—

Cervus maral (*C. wapiti*).

A. Var. *americana*.

B. Var. *asiatica*.

a. *canadensis*.

a. *sibirica*.

b. *californica*.

b. *songarica*.

Var. *songarica*.—These are the Thian-Shan stags, which are larger than the Siberian ones, and darker-coloured in winter, being brownish grey and not of a whitish colour; and, finally, the stems and branches of the horns of Thian-Shan specimens are longer and thicker.

The marking of the skin and the division of the points from the stem of the horns—in short, all the differences separating *C. maral* from *C. elaphus* are present in Siberian and the Thian-Shan specimens.

78. *Cervus capreolus pygargus*.

Is common all over the north-eastern portion, but occasionally occurs also in the neighbouring provinces; it is commonly to be met with in the mountains at an altitude of from 6000 to 10,000 feet above the level of the sea, hardly ever descending lower than 6000.

79. *Cervus* sp.?

This deer, which I could not exactly identify, was observed in the spring of 1858, by some hunters who accompanied me as far as the left shore of the Sir-Darja, near Port Peroff, in

the "sacsaulnics," which extends over some wooded districts. Then again in the autumn of 1866 I saw a horn in Port Peroff belonging evidently to this deer. It was rather large, with six points but no crown; and as I quite forgot to make a drawing of it, I cannot say to which species it belongs. It is certainly a deer's horn belonging to the group of *C. elaphus* and *C. maral*. At the time I thought it belonged to *C. elaphus*. It is, however, more likely to be *C. maral*, which might have descended to the Darja from Karatau, having passed through the forests and plains, which latter extend from Susak to the west end of the Karatau mountain chain, and going round the latter, these plains reach to the Darja and even further than that.

Here the question arises, whether it is the true *C. maral* that inhabits the Karatau and Thian-Shan mountain-plains, which are not covered with fir-wood, or is it a new species altogether.

No specimens have ever been obtained from the western hills of Turkestan, and not even horns from there are known; and all the information we have is taken from the statements of the Kirgies, as I have already mentioned in describing the distribution of *C. maral*.

80. *Equus caballus*.

Is common in Turkestan at all seasons of the year. In winter it inhabits the lower places, not above 6000 feet, but in summer goes even up the highest mountains.

81. *Equus hemionus*.

Is rather rare in Turkestan, and to be found only about the Karatau mountains and near the rivers Aris, Keless, Chirchik, and the delta of the Sir-Darja, and even there only during the winter.

82. *Equus asinus*.

Is rare in the east but common in the west; it does not ascend far up in the hills, and is never to be met with above 6000 to 7000 feet.

83. *Sus scrofa aper*.

Is common all over Turkestan, except the south-western district, and inhabits the plains as well as the mountains, in which latter it also remains during the cold season.

[In the copy of the 'Fauna of Turkestan' translated by me, I find the following short list of addenda, by Dr. N. A. Severtzoff.—F. C. C.]

MAMMALIA.

1. *Felis (Catolynx) chaus* (vel *Chaus catolynx*, Pall.).

Occurs about Semiretchje, Issik-kul, about Hodgent, and in the whole Zarevshan valley, Lower-Oxus marshes. It has considerably larger feet than *F. servalina*.

2. *Canis aureus*.

On the Oxus.

3. *Vesperugo noctula*.

At Cheenaz on the Syr it was caught in March 1875; not observed before.

4. *Spermophilus xanthoprymnus*, Benn.

Erroneously noticed by me formerly as *Sp. fulvus*, Licht., which also exists in Turkestan, but only near the lower Syr. *Sp. xanthoprymnus* was found by me near Tashkent and Cheenaz, and near Samarkand by Russoff.

5. *Spermophilus Eversmanni*, Brdt.

Found, in the summer of 1874, near the mountain-lake Lairam-kul, north of Kulja.

XXXVII.—*Descriptions and Figures of Deep-Sea Sponges and their Spicules, from the Atlantic Ocean, dredged up on board H.M.S. 'Porcupine,' chiefly in 1869 (concluded).* By H. J. CARTER, F.R.S. &c.

[Continued from p. 324.]

Cometella pyrula, n. sp. (Pl. XIV. fig. 20, and Pl. XV. fig. 38.)

General form pear-like, twisted upon itself or towards the stem, which is attached to a small stone; head pyriform, apiculated by the projection of a conical point (Pl. XIV. fig. 20, *f*). Colour cream-yellow. Surface smooth, hard, firm, punctate, each punctum being the apex of a low conical projection formed of spicules arranged in a whorl-like manner (fig. 20, *h*). Pores not seen, probably the puncta respectively